STATINTL

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17 July 1964
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STATINTL

TRIP REPORT

To: [redacted]
July 8, 9 , 1964

STATINTL Purpose: To Evaluate [redacted] Microdensitometers STATINTL

Persons Contacted:

[redacted]

A trip was made on July 8 and 9, 1964 for the purpose of gathering information on, and testing, their microdensitometers to complete
STATINTL the survey being conducted for [redacted] STATINTL

STATINTL The [redacted] is a small firm employing about 80 persons. They have been active in the field of linear measurements for several years and began producing microdensitometers in about 1960. Each of the instruments they manufacture is custom made following customer specifications. A wide variety of ancillary equipment can be incorporated in or supplied with their instruments which at present consists of a basic mechanical-optical system
STATINTL designed by the [redacted]

Two instruments, which were being built for Holloman Air Force Base, were available for our inspection and testing. The two instruments were unfortunately still in the final stages of assembly and testing and were thus not representative of completed instruments. STATINTL

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STATINTL The [redacted] Model 1032A, presently priced at [redacted] includes such features as a complete digital output system using magnetic tape and shaft encoding for position, with auxiliary alphanumeric input capabilities and a thresholding device for clipping densities over the range 0-2, programmable scanning in both the X and Y directions, the [redacted] "Micro Spot" Projector, a two pen (one for plotting the first derivative of the density distance function) Mosely recorder, an automatic roll film transport, and completely variable bilateral illumination and analytical apertures. An automatic film transport device is also available for the instrument. The electronic

components were supplied by the [redacted] optical components are used in the [redacted] with both metallurgical and biological objectives used, depending on the desired magnification, at approximately double the normal tube length. Although [redacted] warned them that this would decrease performance seriously they claimed that they could detect no such deterioration. No oculars are used in the system. The [redacted] claimed that oculars introduced problems of chromatic aberration and non-uniform illumination when used in their system.

We spent most of the first day examining the features of and testing the 1032A microdensitometer. Their only density standard was a [redacted] Step Tablet which resulted in a non-linear density calibration as determined using our "Fish Schurman" filters. They were quite interested in our neutral density filters as well as in our sine wave test charts. Some scans were made using the 1032A instrument, but the minimum scan spped of 0.625 millimeters per minute will cause some degradation of the edge trace due to the quoted 0.4 second full scale response of the recorder.

The second day(July 9) was spent testing the 1140 model microdensitometers, a [redacted] analog instrument utilizing [redacted] electronic components. This instrument has an automatic scan capability in only the X direction with a manual drive for the Y position. Scan speeds from 0.025 millimeters per minute up to 2.5millimeters per minute were available on this instrument but it was found that at the two lowest scan speeds that the stage travel was intermittent due to a faulty gear box. All testing had to be done at a scan speed of 0.25 millimeters per minute. The aperture widths were continuously variable with a series of fixed aperture lengths being obtained by adjusting a "fish tail" plate. The illuminating slit dimensions were kept larger than the pickup slit dimensions by about 30% which is [redacted] suggested procedure.

Because of the incomplete status of both of the instruments no conclusive data was obtained pertaining to the performance of the optical systems. It was agreed that the evaluation of the [redacted] mechanical optical system could be conducted on a completed instrument such as that possessed by the [redacted]

The salient features of the [redacted] instruments and their operation were thoroughly discussed during the two-day visit.

They emphasized the linear measuring accuracy of their instrument in which the plane of motion containing the sample, and the lead screw, have been kept as close as possible to the guiding ways in order to insure 1 to 2-1/2 μ accuracy over the entire scan length. They also pointed out that their quoted accuracy is for the actual sample motion as opposed to, (as they claim some other manufacturer's state) quotations of the lead screw or guiding way accuracy alone. They pointed out that the most precise working standard available was accurate to only 0.3 microns and that any statements of accuracy near or below that value (hinting at [redacted] were meaningless.

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The standard sample viewing device supplied with the [redacted] instruments consists of a modified [redacted] 'zoom macroscope' although a viewing screen has been incorporated in one of the instruments produced for [redacted] Viewing and scanning cannot be accomplished simultaneously. The approximate location of targets of interest can be accomplished while the operator is standing while precise location and alignment are accomplished while seated and looking through the viewing microscope. The precise alignment, while easily accomplished, is somewhat awkward because the operator must reach up to manipulate the manual drives for the stage.

End window photomultiplier tubes (EMI 9502B) are used in the [redacted] instruments. These tubes offer greater homogeneity of area response than do the side window type of tube.

The [redacted] is presently engaged in the production of a trichromatic instrument for the [redacted] This instrument will be available in early 1965.

[redacted]

[redacted]